



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/561,008	12/16/2005	Helmut Forstner	281973US6PCT	6034

22850 7590 09/02/2010
OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, L.L.P.
1940 DUKE STREET
ALEXANDRIA, VA 22314

EXAMINER

ALANKO, ANITA KAREN

ART UNIT	PAPER NUMBER
----------	--------------

1713

NOTIFICATION DATE	DELIVERY MODE
-------------------	---------------

09/02/2010

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

patentdocket@oblon.com
oblonpat@oblon.com
jgardner@oblon.com

Office Action Summary	Application No. 10/561,008	Applicant(s) FORSTNER ET AL.	
	Examiner Anita K. Alanko	Art Unit 1713	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 June 2010.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 36,40,44,47,49,50 and 67-69 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 36,40,44,47,49,50 and 67-69 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 40 and 67 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Försnel in view of Babko-Malyi (US 2003/0106788 A1).

Försnel discloses a method comprising the steps of:

arranging a plurality of nozzles 24 (for example, in one row, col.3, lines 10-12; col.5, lines 19-27), to direct a plasma 34 onto a region of the surface of a substrate from which a coating is to be removed (removal of silicon oil residues from metal surfaces, col.4, lines 47-50, since broadly interpreted residues form a coating that is desired to be removed; the region that is exposed to the plasma jet is the region from which the coating is removed since the etching species are provided by the plasma jet);

directing the plasma onto the region of the surface of the substrate from which the coating is to be removed (removal of silicon oil residues from metal surfaces, col.4, lines 47-50, since broadly interpreted residues form a coating that is desired to be removed),

producing a linear relative movement (arrow "A" in Fig.2, col. 5, lines 46-53, movement along the surface of the workpiece to be treated) in a certain direction ("A") between the nozzles and the substrate to thereby remove a coating from the substrate over a width/area (of the plasma curtain, col.5, line 50).

As to claim 67, Försnel fails to disclose the use of an (elongated) slit-shaped source. It would have been an obvious matter of design choice to use a slit-shaped source, since such a modification would have involved a mere change in the size of a component. A change of size is generally recognized as being within the ordinary level of skill in the art. *In re Dailey*, 357 F.2nd 669, 149 USPQ 1966.

Still further, Babko-Malyi teaches that it is known to change the shapes of openings to either slits and/or holes (paragraph [0038] last line). It would have been obvious to one with ordinary skill in the art to use slits in the method of Försnel in order to direct the plasma in a desired shape to correspond with a desired shape of coating removal, as is useful as taught by Babko-Malyi to yield the predictable result of coating removal.

It would have been obvious to set the slit-shaped nozzle such that the direction of elongation of the slit has a certain orientation direction on the surface of the substrate because Försnel teaches that the location and size of the surface area to be treated can be controlled precisely by adjusting the position of the workpiece in relation to the jet generator as required (col.5, lines 22-27). Thus, although Försnel fails to disclose how to adjust the relative positions, they are nonetheless set so that the desired area of coating removal is achieved. The nozzle opening, including a slit in the modified method of Försnel, would be set in a perpendicular direction (a ninety degree angle) to the plane of the workpiece as depicted in Fig.1, and thus necessarily has a certain orientation direction on the surface of the substrate when the coating is removed.

As to claim 67, Försnel discloses relative movement between the plasma and the workpiece (col.3, lines 20-21), and that the location and size of the surface area to be treated can

Art Unit: 1713

be controlled by adjusting the position of the workpiece 35 relative to the plasma 100 as required (col.5, lines 23-27).

The shape of the opening, the angle of the plasma and the relative movement all affect the introduction of plasma to the substrate and the type of coating removal achieved, and thus are result-effective variables. It would have been obvious to one with ordinary skill in the art that in the modified method of Försnel to include relative movement between the slit shaped nozzles and the substrate as cited in order to remove the desired coating as required by the final product desired because the relative movement appears to reflect a result-effective variable which can be optimized. See MPEP 2144.05 IIB.

As to amended claim 67, Försnel teaches to adjust the concentration of the jet (col.2, lines 30-34), varying flow rate (col.2, lines 58-61), adjusting position (col.5, lines 23-27), and adjusting width of the plasma curtain (col.5, lines 46-53). It would have been obvious to control the plasma to remove the coating to a desired depth in the modified method of Försnel because Försnel teaches techniques to vary the plasma curtain which are useful to achieve coating removal.

As to claim 40, Försnel fails to explicitly disclose the shape of the workpiece (col.2, lines 5-11). However, workpieces with straight edges and corners are well known. It would have been obvious to include movement parallel to the edge of the substrate in the method of Försnel because Försnel discloses parallel rows of plasma jets (Fig.2), which suggests to have uniform removal by movement as cited.

Claims 68-69 and dependent claims, claims 36, 44, 49-50, are rejected under 35 U.S.C. 103(a) as being unpatentable over Försnel in view of Babko-Malyi (US 2003/0106788 A1) and Lenhardt (US 5,319,186).

The discussion of modified Försnel from above is repeated here.

As to claims 68-69, Försnel fails to disclose pivoting the nozzle or row of nozzles. Workpieces with corners are well known and processing parallel to edges is obvious, as discussed above with claim 40. Försnel discloses to brush the nozzle or row of nozzles over the surface, but fails to disclose how to process material at the corners of square substrates.

Lenhardt teaches a useful method for processing material at the corners of substrates. Lenhardt teaches that the processing tool (the exact nature is not critical, but may comprise a nozzle for sealing or a grinding tool for removing a coating, col.3, lines 31-37), is displaced across a surface parallel to the plane of substrate travel (col.2, lines 52-53), and when the corner of the substrate is reached (col.4, lines 47-48), the tool is rotated or pivoted about an axis perpendicular to the substrate in a region of the corner of the substrate (col.4, lines 42-48).

Therefore, it would have been obvious to one with ordinary skill in the art to pivot the nozzle or the row of nozzles as cited from one rotational angle to another rotational angle in the modified method of Försnel because Lenhardt teaches that this is a useful method for processing material at the corners of substrates.

Further as to amended claim 68-69, Försnel teaches to adjust the concentration of the jet (col.2, lines 30-34), varying flow rate (col.2, lines 58-61), adjusting position (col.5, lines 23-27), and adjusting width of the plasma curtain (col.5, lines 46-53). It would have been obvious to control the plasma to remove the coating to a desired depth in the modified method of Försnel

Art Unit: 1713

because Försnel teaches techniques to vary the plasma curtain which are useful to achieve coating removal.

As to claim 36, Försnel discloses to change a coverage width of plasma and substrate by deactivating or activating plasma beams (col.5, lines 51-53).

As to claim 44, Försnel fails to explicitly disclose the shape of the workpiece (col.2, lines 5-11). However, workpieces with end edges or faces are well known. It would have been obvious to include movement normal to the end of the substrate as cited in the method of Försnel because it is obvious to remove coatings that are not needed in the final product, such as from the end, and pivoting to the normal direction is within the scope of one skilled in the art.

As to claims 49-50, it would have been obvious to use the method of Försnel to remove the cited coatings because they are conventionally removed by plasma etching and is advantageous in that reactant species can be optimized depending on the type of coating to be removed.

Claim 47 is rejected under 35 U.S.C. 103(a) as being unpatentable over Försnel in view of Babko-Malyi (US 2003/0106788 A1), Lenhardt (US 5,319,186) and Tanaka et al (US 2002/0008082 A1).

The discussion of modified Försnel from above is repeated here.

As to claim 47, Försnel fails to explicitly disclose a discharge device. Tanaka teaches that suctioning or evacuating by-products (by 60a) is useful when using a plasma jet (Fig.2) in order to achieve high accuracy in coating removal. It would have been obvious to use a

Art Unit: 1713

discharge device in the method of Försnel because Tanaka teaches that it is useful to achieve high accuracy in coating removal.

Response to Amendment

Claims 40 and 67 are rejected under 35 U.S.C. 103(a) as being unpatentable over Försnel in view of Babko-Malyi (US 2003/0106788 A1).

Claims 68-69 and dependent claims, claims 36, 44, 49-50, are rejected under 35 U.S.C. 103(a) as being unpatentable over Försnel in view of Babko-Malyi (US 2003/0106788 A1) and Lenhardt (US 5,319,186). Lenhardt is newly applied to show pivoting to another rotational angle about the axis of rotation that is perpendicular to the substrate in the region of a corner of the substrate.

The rejection of claim 69 is rejected under 35 U.S.C. 103(a) as being unpatentable over Försnel in view of Babko-Malyi (US 2003/0106788 A1), and Siniaguine et al (US 6,238,587 B1) is withdrawn in view of the claim amendment citing rotation to another rotational angle.

Claim 47 is rejected under 35 U.S.C. 103(a) as being unpatentable over Försnel in view of Babko-Malyi (US 2003/0106788 A1), Lenhardt (US 5,319,186) and Tanaka et al (US 2002/0008082 A1).

Response to Arguments

Applicant's arguments filed 6/23/10 have been fully considered but they are not persuasive.

Applicant argues that there is no teaching that the width/area by which a coating is removed by a plasma should be determined by an angle of orientation of the nozzle relative to its direction of movement. In response, the area removed is necessarily determined by the angle as cited because if the area is not treated, then the coating is not removed. It is noted that applicant has not cited changing the width/area by changing the angle of orientation. The applied art necessarily achieves the cited width/area because it has slit-shaped nozzle or rows of nozzles.

As to claims 68-69, the reliance upon common sense and reliance upon Siniaguine are removed from the rejections. Lenhardt is applied to teach that a tool is rotated about an axis perpendicular to the plane of the substrate at the region of the corner of a substrate to another rotational angle in order to treat material at the corners of square substrates.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

Art Unit: 1713

however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anita K. Alanko whose telephone number is 571-272-1458. The examiner can normally be reached on Mon-Fri until 3:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nadine Norton can be reached on 571-272-1465. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Anita K Alanko/
Primary Examiner, Art Unit 1713